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EXAMINER	
HOLTON, STEVEN E	
ART UNIT	**PAPER NUMBER**
2629	

DATE MAILED: 08/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/649,708	MORAG ET AL.	
	Examiner	Art Unit	
	Steven E. Holton	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15,17-29,31-42,53-63 and 66-71* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *59* is/are allowed.

6)☒ Claim(s) *1-13,18,20,22-27,29,31-36,38-42,53-55,57,58,60-63 and 67-71* is/are rejected.

7)☒ Claim(s) *14,15,17,19,21,28,37,56 and 66* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 6-2-04
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is made in response to applicant's amendment filed on 6/15/2006. Claims 1-15, 17-29, 31-42, 53-63, and, 66-71 are currently pending in the application. An action follows below:

Election/Restrictions

2. Applicant's election without traverse of Group 1 in the reply filed on 6/15/2006 is acknowledged.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 12, 32, 33, 35, 36, 42, 57, 63 and 67 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claim 12, the claim recites "at least one high pass amplifier connected between sensors of said sensing arrangement and said amplifier arrangement". Fig. 5 of the disclosure depicts the amplifier arrangement (elements 60.1-60.n) connected to the sensor arrangement (the input lines leading from the left of the figure) but lacks the

high pass amplifier connected between the sensors and amplifiers. Further, the only mention of a high pass amplifier is made in paragraph 27 in the summary portion of the disclosure, no further explanation of a high pass amplifier is made within the disclosure.

Regarding claims 32, 33, and 35, the claims recite methods of processing sensed locations based on possible movements, likely movements and prediction of future locations of an object. The disclosure discusses the use of smoothing with a history of point location (paragraphs 214-218), but does not provide enough information to enable one skilled in the art to implement filters based on possible or likely hand movements or to predict future positions of the object.

Regarding claim 36, there is no discussion of "a slow movement tracker" or "a fast movement tracker" within the disclosure. The disclosure lacks information to enable one skilled in the art to provide a fast or slow movement tracker to correct errors with the sensed location of the object.

Regarding claim 42, there is no discussion of "a thresholder, associated with said transform functionality" within the disclosure other than a being mentioned in the summary of the invention. The disclosure lacks information to enable one skilled in the art to provide a thresholder within the system to determine which type of transformation would be used based on the number of frequencies to be sensed.

Regarding claim 57, there is no discussion of "a frequency detector to detect a number of object frequencies present" within the disclosure other than being mentioned in the summary of the invention. The disclosure lacks information to enable one skilled in the art to provide a frequency detector or how a frequency detector would be

integrated within the device for dynamically controlling the sampling rate of the input device.

Regarding claim 63, the disclosure fails to provide enough information to enable one skilled in the art to provide a state that determines "a current velocity of said object" or "current acceleration state of said object".

Regarding claim 67, the claim recites the compensation database storing "differences in the magnitude of the signal between individual sensors are encoded." The Examiner assumes this is dealing with paragraph 144 of the disclosure dealing with compensation of the sensor lines. However, the disclosure states that the database would store differences of a measured signal and an expected signal for the data lines (paragraph 144, last 2 sentences) where the difference of the signal between the sensors is not the stored information, but the difference between the signal of the real sensor and an ideal sensor is measured and stored.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

→ Which claim is (??) heading is missing

4. Claim 19 recites the limitation "each object" in line 1. There is insufficient antecedent basis for this limitation in the claim. Claim 1 recites only "object location" and "said location" and does not expressly discuss the use of multiple objects.

5. Claim 55 recites the limitation "dynamic control of said sampling rate" in line 2. There is insufficient antecedent basis for this limitation in the claim. The Examiner

notes that the reference to the sampling rate in claim 54 was removed with the most recent amendment to the claim.

6. Claim 62 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the phrase "wherein said arrangement is operable to use..." it is unclear which arrangement is being discussed. .It could be the transparent sensing arrangement named in claim 60 or the excitation arrangement named in claim 69. It is unclear which of these arrangements is being operated to set different properties.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-6, 8, 13, 18, 20, and 53 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshida et al. (USPN: 5854881), hereinafter Yoshida.

Regarding claim 1, Yoshida discloses a display device with "a transparent arrangement of sensors (Fig. 7, elements 201 and 202; col. 27, lines 46-51) located at said electronically refreshable display screen (Fig. 7, element 200) for detecting a location of said object (Fig. 7, elements 203-207 is an object), said sensors having outputs, and an arrangement of amplifiers (Fig. 34, elements 311 and 312) for

producing differential signals associated with said outputs, said differential signals being signals indicative of a differential between at least two of said outputs, said device being operable to use said signals in said interaction (col. 53, line 57 – col. 54, line 19 and col. 55, lines 1-15 and lines 29-46)."

Regarding claim 2, Yoshida discloses using differential amplifiers (Fig. 34, elements 311 and 312).

Regarding claim 3, Yoshida discloses detecting a magnetic field (col. 55, lines 8-15). The Examiner notes that a electric field is inherently associated with the magnetic field and the electric field is also measured by the sensors described by Yoshida.

Regarding claims 4 and 8, Yoshida discloses a refreshable display screen with a flat panel type of display screen (col. 14, lines 51-54).

Regarding claims 5 and 6, Yoshida discloses a coordinate pointing device (Fig. 34, element 208). The Examiner notes that pointing devices for such input systems are commonly referred to as stylus.

Regarding claim 13, Yoshida discloses using a grid of straight line conductors (Fig. 34, elements 314 and 315).

Regarding claim 18, Yoshida discloses the differential amplifiers having a first and second inputs associated with different outputs (Fig. 34, the inputs of element 312 are for different 314b elements) and the outputs are associated with respectively non-neighboring sensors (Fig. 34, elements 314b are not neighboring but divided between elements 314a).

Regarding claim 20, Yoshida discloses the system is able to detect the phases of the signals and determine location of the stylus based on the phase input from different sensors (Fig. 8; col. 26, line 14 – 67).

Regarding claim 53, Yoshida discloses a input device with "a transparent sensing grid (Fig. 7, elements 201 and 202; col. 27, lines 46-51) located at said electronically refreshable display screen (Fig. 7, element 200) for detecting a location of said object (Fig. 7, elements 203-207 is an object), said grid having a plurality of outputs, and an arrangement of amplifiers (Fig. 34, elements 311 and 312) wherein each amplifier is connected over at least two outputs of said sensing grid to produce an output signal being a function of said at least two outputs (col. 53, line 57 – col. 54, line 19 and col. 55, lines 1-15 and lines 29-46)."

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 7 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida.

Regarding claim 7, Yoshida does not expressly disclose providing the pointing device as a gaming piece, but it would have been a matter of design choice for one

skilled in the art to provide the pointing device with a covering to use the pointing device as a game piece rather than a pencil like stylus.

Regarding claim 9, the Examiner notes that it is well known in the art to provide pen type input devices for mobile and handheld computers. It would have been a matter of design choice for one skilled in the art to modify the input system of Yoshida to operate with a handheld or mobile computer rather than a large flat screen display for a desktop computer.

Regarding claims 10 and 11, the Examiner takes Official Notice that transparent organic conductive foils and indium tin oxide (ITO) are well known in the art and that it would be a matter of design choice for one skilled in the art to utilize a transparent organic conductive film or an ITO conductor as part of the sensor arrangement.

9. Claims 22-27, 38-41, 54, 58, 60, 61, and, 69-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida in view of Weiner et al. (WO 02/01791), hereinafter Weiner.

Regarding claim 22, as discussed above Yoshida discloses all of the limitations except, "wherein said object is a passive object, the digitizer further comprising an excitation arrangement located around said screen for sending an excitation signal to said object, thereby to energize said object to generate an electric field."

Weiner discloses an object position locator with a passive object (Figs. 12 and 13, element 18) with an excitation arrangement (Fig. 13, element 82) that sends an excitation signal to the object and the object then creates an electric/magnetic field that

is sensed by the coil elements (Figs. 12 and 13, elements 62 and 66; page 20, final paragraph continuing on page 21).

At the time of invention it would have been obvious to one skilled in the art that the location detection system of Yoshida could be modified to use the excitation system described by Weiner. This would replace the active input device used by Yoshida with the passive piece of Weiner and use the excitation loop to provide energy for detection of location. The motivation for doing so would be to provide the use of a passive input object rather than an active object. This would remove the need for providing a battery or other power supply to the input object and the system described by Weiner further allows for the use of multiple identifiable tokens that can all be activated using the excitation coil to measure multiple positions. Thus, it would have been obvious to one skilled in the art that the amplifier measuring techniques of Yoshida could be combined with the excitation coil system of Weiner to produce the device as described in claim 22.

Regarding claims 23-25, Weiner discloses using a microcontroller (Fig. 15, element 100) to produce the signal to be transmitted by the system (page 23, final paragraph leading to page 24). At the time of invention it would be obvious to one skilled in the art that the frequency, amplitude and duration of the pulse generated by the microprocessor could be set to any desired values of frequency, amplitude or duration making the system able to generate signals with dynamically variable frequency, amplitude and duration.

Regarding claims 26 and 27, Weiner describes operating the detection after waiting a specific time after the excitation is transmitted to the system (page 24, the

paragraph beginning "Preferably, after the signal is output..."). The wait described by Weiner would be a delay set in the microcomputer to wait before making measurements and calculations of the measured signals. Thus, the system provides blanking controllability and operating with a predetermined delay.

Regarding claim 38, Weiner discloses using a microprocessor for using a Fast Fourier Transform of the signals (page 24, first, second and third complete paragraphs). The Examiner notes that a Fast Fourier Transform (FFT) is a transformation of a signal to the frequency domain.

Regarding claim 39, Weiner discloses using different types of algorithims based on the number of tokens being used (page 24, third complete paragraph).

Regarding claims 40 and 41, Weiner only describes using a Fast Fourier Transform (page 24, first complete paragraph). But does not expressly disclose using a Discrete Fourier Transform. The Examiner takes Official Notice that Discrete Fourier Transform is known in the art and that using it to transform a signal to a frequency domain would be an obvious option for one skilled in the art as a design choice of type of transformation algorithm to transfer a time domain signal to a frequency domain signal.

Regarding claim 54, the Examiner notes that the claimed invention is a broader combination of the limitations of claim 22. Therefore the arguments provided with the combination of Yoshida and Weiner used for claim 22 can be further applied to claim 54.

Regarding claim 58, the Examiner notes that the claimed invention has the same limitations as claims 26 and 27. Therefore, the arguments provided for claims 26 and 27 can be applied to claim 58 as well.

Regarding claim 60, the Examiner notes that the stylus used by Weiner is passive when using the excitation arrangement. Therefore, the combination of Yoshida and Weirner provide a passive stylus, a transparent arrangement of sensors over a display for determining the location of the stylus. This is similar to the system of claim 22.

Regarding claim 61, Weiner discloses using a microcontroller (Fig. 15, element 100) to produce the signal to be transmitted by the system (page 23, final paragraph leading to page 24). At the time of invention it would be obvious to one skilled in the art that the frequency, amplitude and duration of the pulse generated by the microprocessor could be set to any desired values of frequency, amplitude or duration making the system able to generate signals with dynamically variable frequency, amplitude and duration.

Regarding claim 68, the claim includes an excitation arrangement which is the same as provided in claim 22. Therefore, the combination of Yoshida and Weiner read on the limitations of claim 68.

Regarding claim 69, Weiner discloses using a microcontroller (Fig. 15, element 100) to produce the signal to be transmitted by the system (page 23, final paragraph leading to page 24). At the time of invention it would be obvious to one skilled in the art

that the microprocessor could change properties of the signal to be transmitted from the excitation arrangement.

Regarding claim 70, the Examiner takes Official Notice that transparent organic conductive foils are well known in the art and that it would be a matter of design choice for one skilled in the art to use an organic foil as one of the conductors for the input device.

Regarding claim 71, Yoshida discloses using a grid of straight line conductors (Fig. 34, elements 314 and 315).

10. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida in view of Matthews et al. (USPN: 4788386), hereinafter Matthews.

Regarding claim 29, as discussed above Yoshida discloses all of the limitations except, "a compensation data base in which fixed variations in electromagnetic interference over said sensing arrangement are encoded."

Matthews discloses a digitizer that measures background noise and stores the noise in memory so that the noise is then subtracted from readings to provide more accurate readings for the inputs (col. 3, lines 57-66).

At the time of invention it would have been obvious to one skilled in the art to combine the teachings of Yoshida with Matthews to produce digitizer with a noise reduction circuit. The noise reduction circuit would measure interference noise and save the measured interference to be subtracted from input readings. The motivation for doing so would be to provide a noise reduction system so that the digitizer provides

a clearer input reading for use by the digitizer. Thus, it would be obvious to combine the teachings of Yoshida and Matthews to produce a device as specified in claim 29.

11. Claims 31 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida in view of Hardin Sr. et al. (USPN: 4817034), hereinafter Hardin.

Regarding claim 31, as discussed above Yoshida discloses all of the limitations except, "comprising an object movement history arrangement for storing data of immediately preceding movement of said object, and using said data in processing of a current location of said object."

Hardin discloses a digitizer for handwriting input that uses a history of previous input locations to smooth the displayed line of the track of the input points (abstratct; col. 16, line 44- col. 17, line 2 has further discussion of smoothing). The Examiner notes that the comparison is made of groups of 3 input points which means that at least 2 points are stored in a history function for the processing.

At the time of invention it would have been obvious to one skilled in the art to combine the teachings of Yoshida and Hardin. The combination of the two would provide a digitizer input device with a history function to store previously input points and use the previously input points to smooth the input provided. The motivation would be to provide a smoothing function to the input of a digitizer so that extraneous data points are removed from the history storage and a smoother output is obtained. Thus, it would have been obvious to combine the teachings of Yoshida and Hardin to produce a device as specified in claim 31.

Regarding claim 34, Hardin discloses using a smoothing process for smoothing he coordinates provided by the input object (col. 16, line 44 – col. 17, line 2).

Allowable Subject Matter

12. Claims 14, 15, 17, 19, 21, 28, 37, 56, and 66 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. Claim 59 is allowed.

14. Claims 19 and 55 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The present invention is directed to a digitizer input device coupled with a display system. Independent claim 59 and related dependent claim 19 identify the uniquely distinct features "respectively non-neighboring sensors per amplifier being selected such that different object positions generate outputs at different combinations of amplifiers thereby permitting different amplifier combinations to be decoded to individual sensors". The closest prior art, Yoshida discloses using only 2 amplifiers able to be read for each of the input sensor wires through selectable inputs for the amplifier. Rather than using multiple amplifiers, each assigned to specific input sensors, Yoshida

uses a few amplifiers able to obtain inputs from selectable input sensors, thus Yoshida fails to anticipate or render the above underlined limitations obvious.

Dependent claim 14 identifies the unique feature of "the distance between said first and second sensor is larger than the effective range of the signal transmitted by said object." This is drawn to purposely selecting the sensor wires to be provided to the amplifiers to be physically located far enough apart that only one of the wires would be able to receive a signal from the emitting object. The closest prior art, Yoshida fails to provide such a requirement to the measurement of the signals of the sensor arrangement.

Dependent claim 37 identifies the unique feature of producing an exponentially decaying signal for sensing by the sensors, then multiplying the signal by an opposite, exponentially rising signal to cancel out frequency side lobes and to increase the resolution of the digitizer. The closest prior art, Weiner and Yoshida fail do discuss using exponential signals in such a manner to remove unwanted effects or to increase resolution of the digitizer.

Dependent claim 55 identifies the unique feature of providing a state detector to determine the state of the input object and then altering the sampling rate of the digitizer based on the state. The closest prior art, Wiener and Watanabe (USPN: 6236386) disclose a sampling rate that may be set as desired by do not disclose applying the state of the input object to alter the sampling rate and fail to anticipate or render the above underlined limitations obvious.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fleck et al. (USPN: 5793360) discloses a digitizer with a pen that emits different frequencies depending on the state of the input stylus.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven E. Holton whose telephone number is (571) 272-7903. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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August 17, 2006

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